

REMARKS

Claims 1 through 6 are currently pending in the application.

This amendment is in response to the Office Action of October 6, 2006.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Applicant's Admitted Prior Art in view of Hammond et al. (U.S. Patent 5,950,071) and in view of Vaught (U.S. Patent 5,023,424), and further in view of either Rimai et al. (U.S. Patent 6,297,138) or McCulloch (U.S. Patent 5,930,606)

Claims 1 through 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Hammond et al. (U.S. Patent 5,950,071) and in view of Vaught (U.S. Patent 5,023,424), and further in view of either Rimai et al. (U.S. Patent 6,297,138) or McCulloch (U.S. Patent 5,930,606). Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant asserts that to establish a *prima facie* case of obviousness under 35 U.S.C. § 103 three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations. Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure.

Turning to the cited prior art, the AAPA teaches or suggests the use of lasers for the removal of resist from semiconductor substrates.

The Hammond et al. reference teaches or suggests that lasers may be used for methods of particle desorption in ablative or non-ablative processes which is analogous to chemical etching. Like chemical etching, laser ablation tends to micro-roughen the surface, making the process generally unsuitable for semiconductor or FPD cleaning applications.

The Vaught reference teaches or suggests the use of laser induced shock waves to dislodge particles from a wafer surface using a wafer support, a particle detector and computer for locating and storing the locations of particles on the wafer.

The Rimai et al. reference teaches or suggests a method of using a laser having a high impact energy focused at a metal target to cause an emission of a plume of metal atoms from the target which plume in turn impinges on the surface of a substrate where it deposits a metal film to a desired thickness and having a desired roughness. The Rimai et al. reference does not teach or suggest roughening the surface of the semiconductor substrate.

The McCulloch reference teaches or suggests that laser treatment of layers of a crystalline amorphous silicon material film deposited on layers of polymer results in significant non-uniformities in the crystalline amorphous silicon material film causing a roughening of the surface of the crystalline amorphous silicon material film resulting in different device characteristics in thin-film devices formed with different film areas and possible detaching of the crystalline amorphous silicon material film from the layers of polymer and/or ablated areas. The McCulloch reference does not teach or suggest roughening the surface of the semiconductor substrate.

Applicant asserts that any combination of AAPA in view of the in view of the Hammond et al. reference and in further view of the Vaught reference and yet further in view of either Rimai et al. reference or McCulloch reference and does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103 regarding the claimed inventions of presently amended independent claims 1, 3, and 5 because no combination of such cited prior art teaches or suggests all the claim limitations of the claimed inventions and because the cited prior art teaches away from any combination thereof. Applicant assert that any combination of the AAPR in view of the Hammond et al. reference and in further view of the Vaught reference and in still yet further view of either the Rimai et al. reference or the McCullough reference does not teach or suggest the claim limitations of the claimed inventions of presently amended independent claims 1, 3, and 5 calling for “providing a semiconductor substrate having the surface”, “finding irregularities to remove from the semiconductor substrate by scanning the semiconductor substrate to locate irregularities”, “determining irregularities to remove from the semiconductor substrate by

scanning the semiconductor substrate”, “locating irregularities to be removed from the semiconductor substrate by scanning the semiconductor substrate”, “roughening the surface of the semiconductor substrate when removing irregularities”, “roughening the surface of the semiconductor substrate while removing irregularities”, and “roughening the surface of the semiconductor substrate while removing irregularities from the semiconductor substrate”.

Neither the AAPA nor the Hammond et al. reference nor the Vaught reference nor the Rimai et al. reference nor the McCullough reference nor any combination of the AAPA in view of the Hammond et al. reference and in further view of the Vaught reference and in still yet further view of either Rimai et al. reference or McCulloch reference teaches or suggests any such claim limitations whatsoever.

Applicant asserts that the AAPA merely teaches or suggests the use of a laser to remove resist from semiconductor substrates while the Hammond et al. reference teaches or suggests that a laser cannot be used to roughen a semiconductor substrate and while the Vaught reference teaches or suggests locating and storing the locations of particles on the wafer using a computer while the Rimai et al. reference teaches or suggests metal deposition using a laser while the McCullough reference teaches or suggests damaging a semiconductor material using a laser.

Applicant asserts the no combination of such prior art teaches or suggests the claim limitations of scanning the semiconductor substrate to locate the irregularities. Applicant assert that any such combination of the cited prior art cannot and does not teach or suggest the claim limitations of presently amended independent claims 1, 3, and 5 whatsoever. Accordingly, presently amended independent claims 1, 3, and 5 are allowable as well as dependent claims 2, 4, and 6 therefrom.

Applicant further asserts that the cited AAPA and the Hammond et al. reference and the Vaught reference and either the Rimai et al. reference and the McCulloch reference teach away from any combination thereof because the Hammond et al. reference specifically states that laser ablation cannot be used with semiconductor substrates. Both AAPA and the Vaught reference teach or suggest semiconductor substrates. If the Hammond et al. reference laser ablation is used to roughen the surface of the semiconductor substrates of AAPA or the Vaught reference, those substrates are destroyed. The Rimai et al. reference teaches or suggests a method of using a laser having a high impact energy focused at a metal target to cause an emission of a plume of metal

atoms from the target which plume in turn impinges on the surface of a substrate where it deposits a metal film to a desired thickness and having a desired roughness. The Rimai et al. reference does not teach or suggest roughening the surface of the semiconductor substrate. Similarly, the McCulloch reference teaches or suggests that laser treatment of layers of a crystalline amorphous silicon material film deposited on layers of polymer results in significant non-uniformities in the crystalline amorphous silicon material film causing a roughening of the surface of the crystalline amorphous silicon material film resulting in different device characteristics in thin-film devices formed with different film areas and possible detaching of the crystalline amorphous silicon material film from the layers of polymer and/or ablated areas. The McCulloch reference does not teach or suggest roughening the surface of the semiconductor substrate. Applicant asserts that no one of ordinary skill in the art would destroy a semiconductor substrate using the Hammond et al. method in view of the Vaught method and either the Rimai et al. method or the McCullough method. Accordingly, any combination of AAPA in view of the Hammond et al. reference and in further view of the Vaught reference and in further view of either the Rimai et al. reference or the McCullough reference cannot and does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103 regarding the claimed inventions of presently amended independent claims 1, 3, and 5 as well as dependent claims 2, 4, and 6 therefrom. Therefore, such claims are allowable.

Applicant submits that claims 1 through 6 are clearly allowable over the cited prior art.

Applicant requests the allowance of claims 1 through 6 and the case passed for issue.

Respectfully submitted,



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